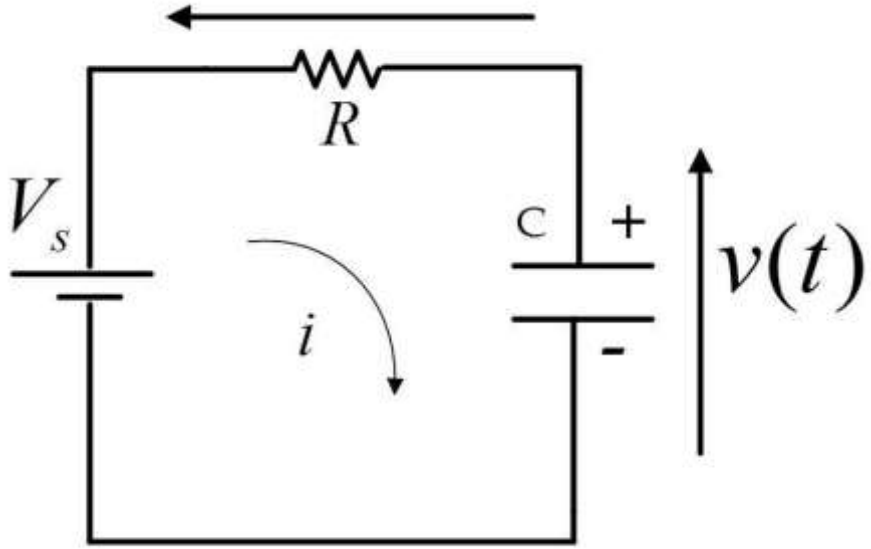
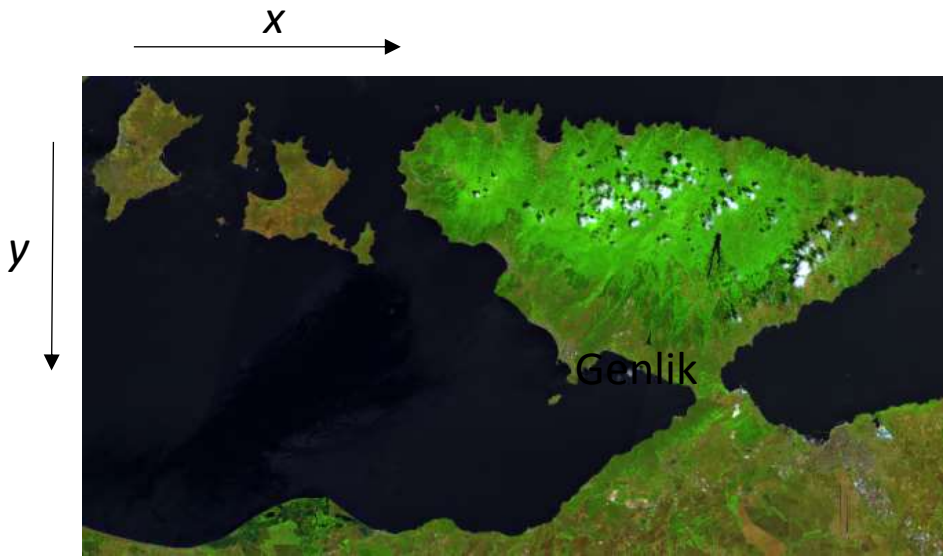
İşaretler ve Sistemler

i(t) : Devredeki akım işareti

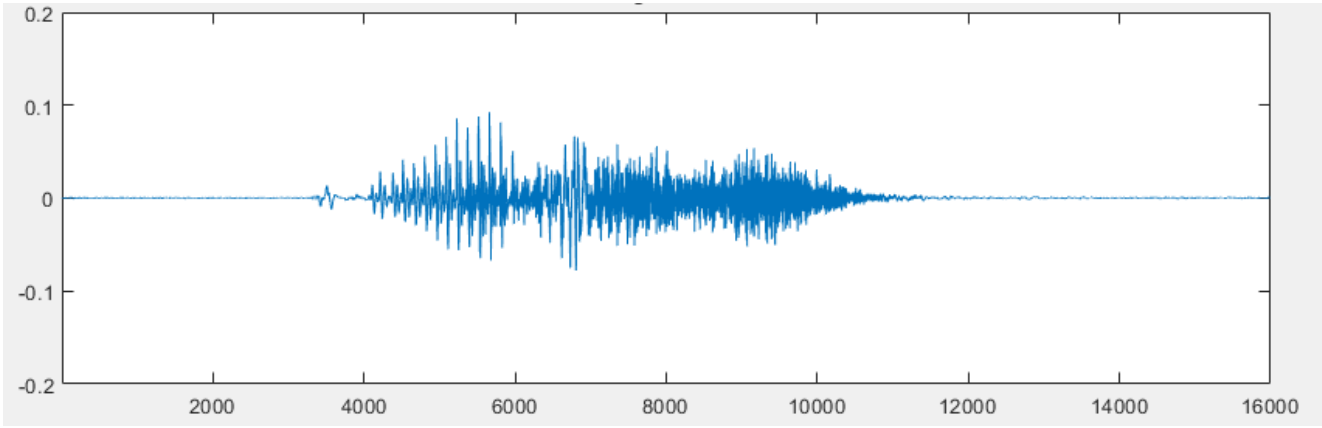
v(t): Kapasite üzerindeki gerilim işareti





Matematiksel fonksiyon: I(*x*, *y*)

«YES» Kelimesi için Ses Sinyali

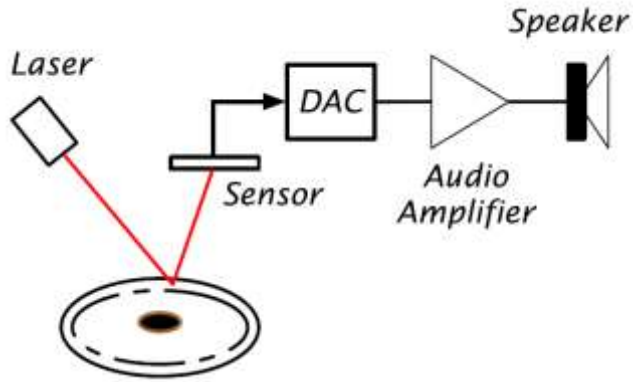


Zaman (t)

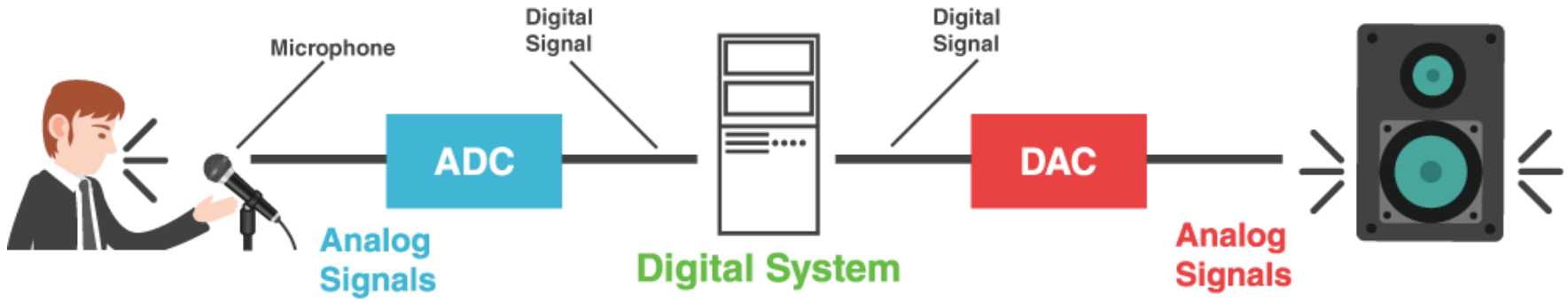
İşaretler ve Sistemler

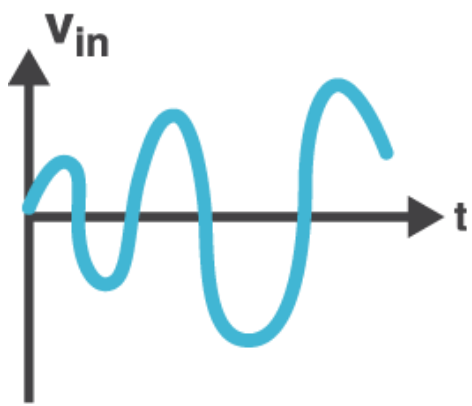
Kullanım alanları:

- Görüntü, müzik, medikal veri vb. sıkıştırılması,
- Müzik sistemlerinde üç boyutlu ses izlenimi yaratılması,
- Cep telefonunda haberleşme sistemlerinde,
- Otomatik yüz ve ses tanımada,
- Çocuklar ile interaktif iletişim kurabilen robotlarda,
- Uçak ve savaş simülasyonlarında,
- Makine öğrenmesi ve yapay zekada

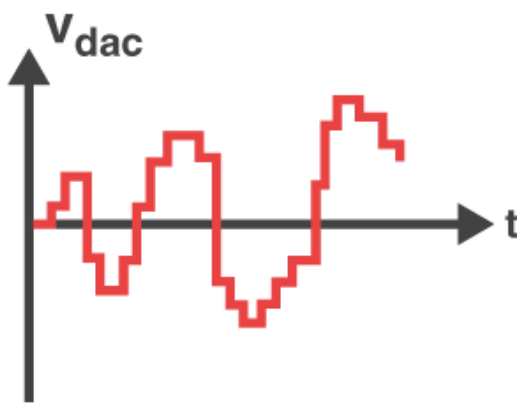


CD Çalar Diyagramı


Microphone
Digital Signal
Digital Signal
ADC
DAC
Analog Signals
Digital System
Analog Signals


Vin
t


01001101


Vdac
t

Zaman-Frekans Domeni Kavramları (Basit)

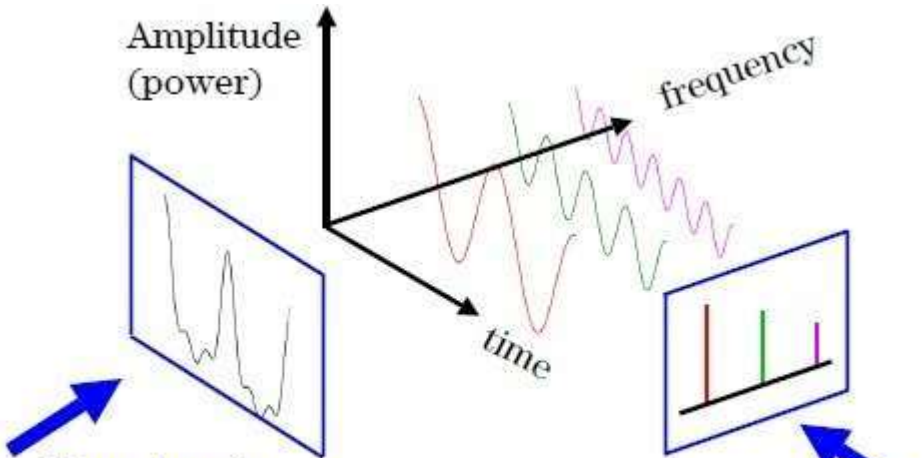
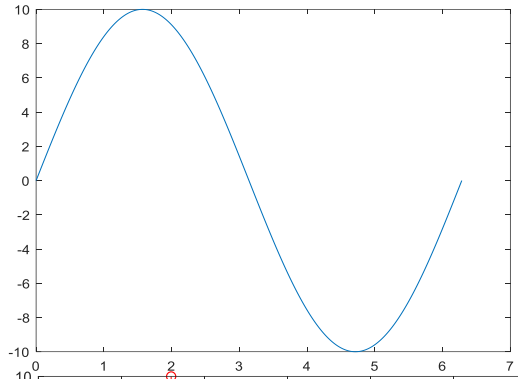


Figure-1

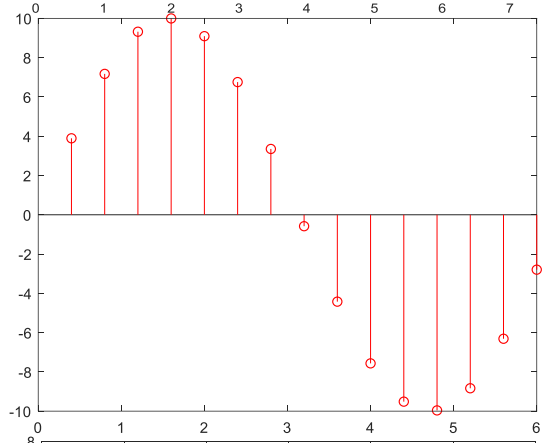
MATLAB kodu

```
clc; clear all; close all;

%% Isaret Olusturma
t = 0:0.0001:2*pi;
xt = 10*sin(t);
figure(1), plot(t,xt);

%% Örnekleme
ts = 4000;
toplamUzunluk = floor(62382/ts);
xSampled = zeros (1,toplamUzunluk);
tSampled = zeros (1,toplamUzunluk);
for i = 1:toplamUzunluk
   tSampled(i) = t(i*ts);
   xSampled(i) = xt(i*ts);
end
hold on;
stem(tSampled,xSampled,'r');

%% Nicemleme
xQuantized = zeros (1,toplamUzunluk);
Qstep = (10 - (-10))/4;

for i = 1:toplamUzunluk
  xQuantized(i) =  floor(xSampled(i)/Qstep)*Qstep + Qstep/2;
end
hold on;
stem(tSampled,xQuantized,'k');
```

xt ->



xSampled ->



xQuantized ->